Attorney Docket No. 2003P01873WOUS

UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Falko Abel et al
Application Number:	Unassigned
Filing Date:	Concurrently Herewith
Group Art Unit:	
Examiner:	
Title:	ELECTRIC MACHINE

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with 37 C.F.R. 1.98, I am submitting a completed "INFORMATION DISCLOSURE STATEMENT BY APPLICANTS" *(Form PTO/SB/08A)* with patents and/or publications as delineated therein attached.

JP2003-88071 discloses that in the case that an armature having an armature coil (3), and a rotor (5A) which has a region different in magnetic resistance in the circumferential direction are installed, the region whose magnetic resistance of the rotor (5A) is large is provided with a cavity (8) and a ferrite magnet (7). The cavity (8) is provided with a central part (9) and side ends (10) which are continuously in contact with both sides in the circumferential direction of the central part (9) and protruded to the outside in the radial direction. The ferrite magnet (7) is fitted in the central part (9) of the cavity (8). The inner size dimension in the circumferential direction of the side end is made smaller than the inner size dimension in the radial direction of the central part (9) of the cavity (8). The ferrite magnet (7) is magnetized so as to cancel a magnetic flux of an armature current which passes the cavity (8).

JP9-294344 discloses a rotor for a permanent magnet type rotating machine composed by inserting a permanent magnet into grooves for a magnet formed in an iron core, swelling outside in the shape of an arc are formed at the corners of the above-mentioned grooves for a permanent magnet corresponding to the corners of the above-mentioned permanent magnet, so as to prevent the corners of the grooves for this magnet from touching the corners of the above-mentioned permanent magnet. Concretely, the above-mentioned grooves for a magnet are constituted like those for a magnet 1A, 1B, 1C and 1D. Namely, at the corners 1a, 1b, 1c,

1d of the grooves for a magnet 1A, 1B, 1C, 1D corresponding to the corners 2a of the permanent magnet 2, swells swelling outside in the shape of an arc formed so as to prevent these corners 1a, 1b, 1c, 1d from touching the corners 2a of the permanent magnet 2.

JP11-220846 discloses a stator core 5 is provided with an inner peripheral-side core section 50 between a shaft 4 and permanent magnets 3, outer peripheral-side core sections 50 on the outer peripheral sides of the magnets 3, and inter-magnet core sections 52 between adjacent magnets 3. The core sections 50, 51, and 52 are connected to each other and the magnets 3 are surrounded by the core. In addition, L-shaped slits 2 are formed in the stator core 5 so as to surround the outer peripheral-side end sections 31 and adjacent magnet-side end sections 32 of the magnets 3. The slits 2 respectively form magnetic flux path core sections 53 among the magnets 3. Since the magnetic permeability of the slits 2 is lower than that of the core 5, the slits 2 can limit the flows of magnetic fluxes caused by the permanent magnets 3 and armature coils of a magnet rotor 11.

JP11-098792 dislcoses the inner periphery of a stator core 1, a driving magnet 6 retained at the outer periphery of a rotor frame 5 with a housing 4 fixed in the center, is disposed so as to face each other. A ball bearing 7 is retained in the center of a housing 4, and a rotor is supported so as to be rotated freely by inserting a shaft 9 fixed to a stator substrate 8 in the ball bearing 7. The shape of a stator core inner periphery surface shape 11 at a salient pole front end 10 of the stator core 1 is formed into a straight shape which can attain easy processing. By forming a gap between the stator core 1 and the driving magnet 6 so as to spread gradually from its center past to its end, energy change in the gap at the time of rotating the rotor is made moderate, thus enabling to reduce cogging torque largely.

JP10-4643 discloses a rotor is constituted, by inserting plate-shape magnets 3a into housing holes 2a, formed through the iron core 1a of the rotor, in the axial direction in parallel with an axial hole 9 by clearance fitting, press-fitting, etc., and covering both ends of the core 1a in the axial direction, by fixing end plates to both ends with a plurality of caulking pins, passed through the core 1a in the axial direction. Although the magnets 3a are rare-earth-type magnets which are magnetically oriented in parallel with the direction of the poles and so magnetized that the adjacent magnets mutually have differing polarities, the magnets 3a can be magnetized sufficiently at both end sections in the oriented direction, when the magnets 3a are magnetized by making a magnetizing current flow, because the magnets 3a are buried near the outer periphery of the core 1a. Therefore, a rotor which has versatility and improved characteristics and can maintain high quality can be obtained.

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JP2002-281700 discloses that in the core section 15 between magnet slots, two high-magnetic resistance sections 151 are provided, where the sections 151 have a narrow core width in the width direction (the peripheral direction of the rotor in this embodiment) for increasing the magnetic resistance and are linear in the longitudinal direction (radial direction of the rotor in this embodiment). A magnet stop section 152, whose core width is wide, is provided between the high- magnetic resistance sections 151, and the magnets 4A and 4B are positioned in the peripheral direction of the rotor by the magnetic stop section 152. Then, an arc section is provided at the corner section of the root in the longitudinal direction of the high-magnetic resistance section 151, where stress tends to be concentrate easily.

JP2001-258187 discloses a rectangular permanent magnet embedding holes 24, corresponding in number to the poles of a rotor and having a long side in the circumferential direction of a core and a short side in the radial direction thereof, are made axially through the laminated core 22 of a rotor at a constant interval in the circumferential direction thereof and fitted with permanent magnets 23 while directing the pole face in the radial direction of the core and alternating the magnetic poles. In such a permanent magnet embedded rotor of a permanent magnet motor, projecting pieces 25 for positioning the permanent magnet are formed at the opposite ends of the permanent magnet embedding hole 24 and the permanent magnet 23 is secured to the laminated core 22 of the rotor by bending the projecting pieces 25 for positioning the permanent magnet.

JP2000-278896 discloses protrusions 13a, 14a are provided at the end of the external circumference side of a flux barriers 13, 14 provided at the rotor core 11, and an internal L of the flux barriers 13, 14 in both sides of the permanent magnet 12 can be set shorter than the width W of the permanent magnet 12. An iron part 15 is also provided between the protrusions 13a, 14a of the flux barriers 13, 14 and the permanent magnet 12. It is preferable that the shape and size of the flux barriers 13, 14 have the end part angle of flux barrier &theta F in the range of 54 to 59 deg. (electrical angle).

JP2000-278895 discloses a pair of flux barriers (magnetic flux shielding section) 15, 16 which do not transmit magnetic flux are formed in the peripheral part of a rotor core outside in the circumferential direction of each permanent magnet 14. Each of the magnetic flux shielding sections 15, 16 consists of a first barrier section 15a, 16a which changes its position nearly in the diametric direction (the barrier position varies in the circumferential direction) and second barrier sections 15b, 16b which are fixed adjacent to an end face in the circumferential direction of the permanent magnet 14. The second barrier sections 15b, 16b are extended parallelly with respect to the axial direction in which silicon steel plates 11 are

stacked just as the permanent magnets 14. However, the first barrier sections 15a, 16a are changed in their positions continuously in one direction from one end face of the rotor core 12 to the opposite end face with respect to the axial direction.

If no translation of pertinent portions of any foreign language patents or publications mentioned within the "INFORMATION DISCLOSURE STATEMENT BY APPLICANTS" is included with the aforementioned copies of those applications, patents and/or publications, it is because no existing translation is readily available to the Applicants. As per the Notice in 1273 OG 55 (August 5, 2003) no copies of any above-mentioned US patents and US patent application publications are submitted for this application which was filed after June 30, 2003.

Respectfully submitted

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June 2, 2006

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Sheet 1 of 3

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U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publicetion Date MM-DD-YYYY	Name of Patantee or Applicant of Cited Document	Pagas, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 4,139,790	02/13/1979	Charles R. Steen	
		US- 2002/0070619	06/13/2002	Noriyoshi Nishiyama et al	
		US- 2002/0047435	04/25/2002	Norio Takahashi et al	
		US- 6,234,767	05/22/2001	Masanobu Takeda et al	
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		JP2003-88071	03/20/2003	Sakai Kazuto et al		
		JP9-294344	11/11/1997	Mizuno Takayuki et al		
		EP 1 067 656	01/10/2001	Andrea Novello		✔
		JP11-220846	08/10/1999	Kikuchi Satoshi et al		
		JP11-98792	04/09/1999	Nishiyama Hiroshi		
		JP10-4643	01/06/1998	Kito Itsuo et al		

Examiner Signature	/Leda Pham/	Date Considered	12/18/2010

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		EP 1 164 684	12/19/2001	Tomonaga Yamamoto et al		✔
		EP 1 065 777	01/03/2001	Ken Ohashi et al		✔
		EP 0 909 003	04/14/1999	Noriyoshi Nishiyama et al		✔
		JP2002-281700	09/27/2002	Mashita Akihide		
		JP2001-258187	09/21/2001	Matsubara Hiroki et al		
		JP2000-278896	10/06/2000	Oki Toshiharu et al		

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		JP2000-278895	10/06/2000	Kimura Masahide et al		
		International Search Report PCT/EP2004/053371				✔

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